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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/330,231 | 06/10/1999 | ROBERTO PASSERONE | 3964-US | 9152 |
| 23639 | 7590 | 07/30/2004 | EXAMINER | |
| BINGHAM, MCCUTCHEN LLP THREE EMBARCADERO, SUITE 1800 SAN FRANCISCO, CA 94111-4067 | | | KING, JUSTIN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2111 | |

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 09/330,231 | Applicant(s) PASSERONE ET AL.  | |
| | Examiner Justin I. King | Art Unit 2111 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Arguments

1. Applicant's argument, filed 4/21/04, with respect to the definition of the non-deterministic has been fully considered and is persuasive. Therefore, the associated rejection has been revised upon further search, a new ground(s) of rejection is made as stated below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-9, 11-19, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over J. Akella et al's Synthesizing Converters Between Finite State Protocols (application's specification pages 4-5) in view of Netravali et al. (U.S. Patent No. 5,680,552).

Referring to claim 1: Synthesizing Converters Between Finite State Protocols discloses two finite state machines and a third finite state machine for a method of transferring valid data

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(specification page 5, lines 3-4). The finite state machine (FSM, also known as automaton) has been long used for data processing simulation, and it is a common and inherited practice to generate a FSM based a set of given inputs or regular expressions. Hence, J. Akella and K. McMillan's computer design includes a mean for receiving a first representation/protocol with regular expressions and a mean for receiving a second representation/protocol with regular expressions, and J. Akella and K. McMillan's computer design also includes a mean to generate a finite automaton for each representation. The specification (page 5, lines 3-4) explicitly discloses that the third FSM represents the valid data transfer; such that it is said the third FSM represents one or more permitted operations of said first and second FSMs.

The topic of the Synthesizing Converters Between Finite State Protocols and the third FSM's given description have explicitly directed Akella and McMillan's computer design to a communication establishment between two FSMs, which is equivalent to the claimed interface. Although Akella and McMillan does not explicitly disclose *automatically* synthesizing the interface between the first and second protocols based on the first and second finite automata in the disclosed section.

Netravali discloses that it is known to automatically synthesize the protocol converter (column 1, lines 36-67, column 2, lines 1-7). Netravali discloses that it is known to convert messages from one protocol to another to rectify any mismatches between network protocols. The messages from two different network protocols with mismatches are the claimed data type with different structures. Furthermore, the court has held that broadly providing a mechanical or automatic means to replace manual activity, which accomplishes the same result, involves only routine skill in the art. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt Netravali's teaching to the Akella

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because Netravali enables one to construct the converter in a relatively short time and the converter can be changed quickly to adapt to changes in the protocol specification (column 1, lines 52-55).

Referring to claim 2: Claim 1's argument applies; furthermore, each FSM is designed to move to different states in responding to the input data, such inherent FSM behavior is the claimed automatically corresponding data from the first and second protocol.

Referring to claim 3: Claims 1-2's arguments apply; furthermore, Netravali discloses that it is to know to translate data between two protocols and rectify any mismatches.

Referring to claim 4: Claims 1-2's arguments apply; furthermore, the initial state's identification, first sequence's identification, regular expression's derivative's constructions, and equivalent expressions' eliminations are the fundamental and basic steps for building a FSM.

Referring to claim 5: Claims 1-2 and 4's arguments apply; furthermore, collecting and integrating data are the fundamental and basic steps for data analysis in a FSM.

Referring to claim 6: Claims 1-2 and 4-5's arguments apply; furthermore, claim 6 is rejected over the claim 3's argument stated above.

Referring to claim 7: Claim 1's argument applies; furthermore, claim 7 is rejected over the claim 3's argument stated above.

Referring to claim 8: Claim 1's argument applies; furthermore, it is clear that since the protocol converter (third FSM) converts two different protocols (first and second FSMs), either every state or selected states from two FSMs will interface via the third FSM. Each FSM remains their own independent operations and each FSM may receive and transmits data to each other via the third FSM. The only communication is either receiving data or transmitting data; and since the third FSM functions as the converter, it is said the third FSM's states will be their

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new states to convert data into the opposing protocol's standard. These are fundamental and basic steps for establishing converters among different protocols/FSMs.

Referring to claim 9: Claims 1 and 8's arguments apply; furthermore, the third FSM represents the valid data transfers (specification, page 5, line 4), and in order for any data transfer to be valid, it cannot result in a data inconsistency.

Referring to claim 11: Claim 1's argument applies; furthermore, claim 11 is rejected over the claim 4's argument stated above.

Referring to claim 12: The storage device and processor are inherent in every computer design. Each protocol needs to transmit its own data to processor to be processed, and this inherited mean for transmitting is equivalent to the receiving unit.

Synthesizing Converters Between Finite State Protocols discloses two finite state machines and a third finite state machine for a method of transferring valid data (specification page 5, lines 3-4). The finite state machine (FSM, also known as automaton) has been long used for data processing simulation, and it is a common and inherited practice to generate a FSM based a set of given inputs or regular expressions. Hence, J. Akella and K. McMillan's computer design includes a mean for receiving a first representation/protocol with regular expressions and a mean for receiving a second representation/protocol with regular expressions, and J. Akella and K. McMillan's computer design also includes a mean to generate a finite automaton for each representation. The specification (page 5, lines 3-4) explicitly discloses that the third FSM represents the valid data transfer; such that it is said the third FSM represents one or more permitted operations of said first and second FSMs.

The Akella's computer design creates a product machine, which is pruned of invalid/useless states (specification, page 5, line 5). Since the third FSM only represents the

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valid data operations between the two protocols, and each protocol's invalid operations or unconvertible operations become non-deterministic (invalid/useless), it is clear that the third FSM only processes the operations, which are deterministic, and thus discards the un-deterministic operations.

The topic of the Synthesizing Converters Between Finite State Protocols and the third FSM's given description have explicitly directed Akella and McMillan's computer design to a communication establishment between two FSMs, which is equivalent to the claimed interface. Although Akella and McMillan does not explicitly disclose *automatically* synthesizing the interface between the first and second protocols based on the first and second finite automata in the disclosed section.

Netravali discloses that it is known to automatically synthesize the protocol converter (column 1, lines 36-67, column 2, lines 1-7). Furthermore, the court has held that broadly providing a mechanical or automatic means to replace manual activity, which accomplishes the same result, involves only routine skill in the art. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt Netravali's teaching to the Akella because Netravali enables one to construct the converter in a relatively short time and the converter can be changed quickly to adapt to changes in the protocol specification (column 1, lines 52-55).

Referring to claim 13: Claim 12's argument applies; furthermore, claim 13 is rejected over the claim 2's argument stated above.

Referring to claim 14: Claims 12-13's arguments apply; furthermore, the third FSM's converting function between different protocols is equivalent to the translation unit.

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Referring to claim 15: Claims 12-13's arguments apply; furthermore, claim 15 is rejected over the claim 4's argument stated above.

Referring to claim 16: Claims 12-13 and 15's arguments apply; furthermore, claim 16 is rejected over the claim 5's argument stated above.

Referring to claim 17: Claim 12's argument applies; furthermore, claim 17 is rejected over the claim 14's argument stated above.

Referring to claim 18: Claim 18's argument applies; furthermore, claim 18 is rejected over the claim 8's argument stated above.

Referring to claim 19: Claim 19's argument applies; furthermore, claim 19 is rejected over the claim 9's argument stated above.

Referring to claim 22: Claim 1's argument applies.

5. Claims 10 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akella in view of Netravali, and in further view of Al-Karmi et al. (U.S. Patent No. 5,862,251) and Mano's Computer System Architecture.

Referring to claim 10: Claims 1 and 8's arguments apply; as stated in the claim 1's argument, the identifying the non-deterministic transition and determine a transition state for each input are fundamental practices in FSM's construction. However, Akella and Netravali do not explicitly mention converting the non-deterministic transition to deterministic transitions and the associated priority. The Computer System Architecture, a popular academic textbook, discloses that it is a well-known practice to implement the priority setting in each system. Al-Karmi discloses a FSM application, wherein it discloses that it is known to convert the non-deterministic transition to multiple deterministic transitions (column 5, lines 8-9).

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Thus, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adopt the practices of and priority and converting the NFS to FS into the Akella and Netravali because it enables the system to allocate resource to tasks according to their time sensitivities, and to eliminate state transition uncertainty.

Referring to claim 20: Synthesizing Converters Between Finite State Protocols discloses two finite state machines and a third finite state machine for a method of transferring valid data (specification page 5, lines 3-4). The finite state machine (FSM, also known as automaton) has been long used for data processing simulation, and it is a common and inherited practice to generate a FSM based a set of given inputs or regular expressions. Hence, J. Akella and K. McMillan's computer design includes a mean for receiving a first representation/protocol with regular expressions and a mean for receiving a second representation/protocol with regular expressions, and J. Akella and K. McMillan's computer design also includes a mean to generate a finite automaton for each representation. The specification (page 5, lines 3-4) explicitly discloses that the third FSM represents the valid data transfer; such that it is said the third FSM represents one or more permitted operations of said first and second FSMs.

The topic of the Synthesizing Converters Between Finite State Protocols and the third FSM's given description have explicitly directed Akella and McMillan's computer design to a communication establishment between two FSMs, which is equivalent to the claimed interface. Although Akella and McMillan does not explicitly disclose *automatically* synthesizing the interface between the first and second protocols based on the first and second finite automata in the disclosed section.

Netravali discloses that it is known to automatically synthesize the protocol converter (column 1, lines 36-67, column 2, lines 1-7). Netravali discloses that it is known to convert

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messages from one protocol to another to rectify any mismatches between network protocols.

The messages from two different network protocols with mismatches are the claimed data type with different structures. Furthermore, the court has held that broadly providing a mechanical or automatic means to replace manual activity, which accomplishes the same result, involves only routine skill in the art.

Furthermore, it is clear that since the protocol converter (third FSM) converts two different protocols (first and second FSMs), either every state or selected states from two FSMs will interface via the third FSM. Each FSM remains their own independent operations and each FSM may receive and transmits data to each other via the third FSM. The only communication is either receiving data or transmitting data; and since the third FSM functions as the converter, it is said the third FSM's states will be their new states to convert data into the opposing protocol's standard. These are fundamental and basic steps for establishing converters among different protocols/FSMs.

Identifying the non-deterministic transition and determine a transition state for each input are fundamental practices in FSM's construction. However, Akella and Netravali do not explicitly mention converting the non-deterministic transition to deterministic transitions and the associated priority. The Computer System Architecture, a popular academic textbook, discloses that it is a well-known practice to implement the priority setting in each system. Al-Karmi discloses a FSM application, wherein it discloses that it is known to convert the non-deterministic transition to multiple deterministic transitions (column 5, lines 8-9).

Thus, it would have been obvious to one having ordinary skill in the computer art to adopt the practices of Netravali and priority and converting the NFS to FS into the Akella because Netravali enables one to construct the converter in a relatively short time and the

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converter can be changed quickly to adapt to changes in the protocol specification (column 1, lines 52-55), and the practices of the priority and FS conversion enable the system to allocate resource to tasks according to their time sensitivities, and to eliminate state transition uncertainty.

Referring to claim 21: Claim 20's argument applies; furthermore, Since the third FSM only represents the valid data operations between the two protocols, and each protocol's invalid operations or un-convertible operations become non-deterministic (invalid/useless), it is clear that the third FSM only processes the operations, which are deterministic, and thus discards the un-deterministic operations.

Response to Arguments/Amendment

6. In responding to Applicant's argument that the prior art Netravali states "automatic generation of systems to overcome architectural mismatches is not foreseeable in the near future", and the claimed invention with the support on Application's page 26 and associated amendment claims automatically synthesizing an interface between the structurally different first and second protocols (Remark, page 9, and page 10, first two paragraphs): Although the prior art on record states that it is not foreseeable in the near future to automatically generate a system to overcome *architectural* mismatch, the prior art on record states that it is known converts any *data/message* between different protocols (column 1, lines 37-67, and column 2, lines 1-7). Thus, the amended claim language is still anticipated by the prior art.

7. In responding to Applicant's argument that the prior art Netravali does not disclose translating data between two protocols and rectify any mismatches (Remark, page 11, 2nd paragraph, lines 4-6) and the prior arts Akella and Netravali do not disclose a synthesizing unit to

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automatically synthesize an interface (Remark, page 12, 3rd paragraph): Netravali does disclose automatically translating data between two protocols and rectify any mismatches (column 1, lines 37-67, and column 2, lines 1-7).

8. In responding to Applicant's argument that the invalid/useless operations are not non-deterministic transitions (Remark, page 12, 2nd paragraph): See the revised rejection above.

9. In responding to Applicant's argument that the prior arts do not disclose "automatically eliminating non-determinisms" as claimed in claim 20 (Remark, page 13, 1st paragraph): See the revised rejection above.


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Conclusion


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin King whose telephone number is (703) 305-4571. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephones are unsuccessfully, the examiner's supervisor, Mark Reinhart can be reached at (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose number is (703)-306-5631.



Justin King
July 23, 2004



XUAN M. THAI
PRIMARY EXAMINER
T-2400